

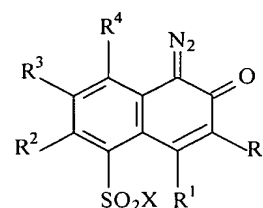
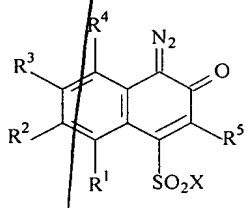
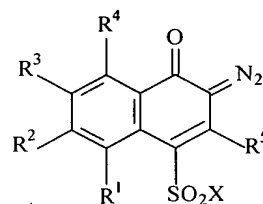
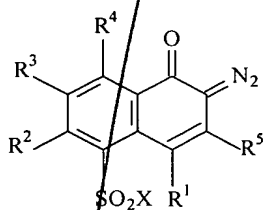
WHAT IS CLAIMED IS:

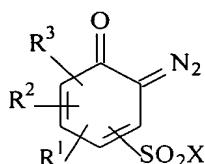
1. A positive working imageable composition, comprising:
 a hydroxyfunctional resin comprising a covalently bound radiation
 sensitive group capable of increasing the solubility of said imageable
 composition in an alkaline developer upon exposure to radiation; and
 an isocyanate crosslinking agent.

2. The imageable composition of claim 1, wherein said
 radiation is ultraviolet radiation.

3. The imageable composition of claim 1, wherein said
 covalently bound radiation sensitive group is derived from an ultraviolet
 radiation sensitive compound.

4. The imageable composition of claim 3, wherein said
 ultraviolet radiation sensitive compound is selected from the group
 consisting of compounds represented by the formula:



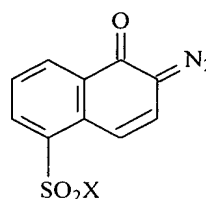
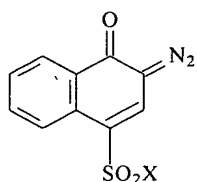
a²
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and a mixture thereof;

- 5 wherein each of R¹, R², R³, R⁴ and R⁵ is independently selected from the group consisting of: hydrogen, linear, branched or cyclic alkyl of 1 to 22 carbon atoms, aralkyl of 6 to 22 carbon atoms, aryl, alkaryl, alkoxy of 1 to 22 carbon atoms, haloalkyl, halogen, acyl, ester and cyano; and wherein x is halogen.

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5. The imageable composition of claim 4, wherein said ultraviolet radiation sensitive compound is selected from the group consisting of compounds represented by the formula:



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wherein x is chlorine.

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6. The imageable composition of claim 1, wherein said hydroxyfunctional resin comprising a covalently bound radiation sensitive group is derived from a hydroxyfunctional resin free of radiation sensitive groups.

7. The imageable composition of claim 6, wherein said polyfunctional phenolic resin free of radiation sensitive groups is selected

Sub
a³

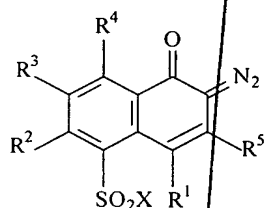
from the group consisting of: polyfunctional phenolic resin, a novolak resin, a pyrogallol/acetone resin, polyvinyl phenol polymer, vinyl phenol/hydrocarbyl acrylate copolymer, a resole resin, an acrylic resin, a polyester resin, a polyurethane resin, a polyol and a mixture thereof.

8. The imageable composition of claim 7, wherein said polyfunctional phenolic resin free of radiation sensitive groups is selected from the group consisting of: a phenol novolak resin, a cresol novolak resin, a phenol/cresol novolak resin, a resole resin and a mixture thereof.

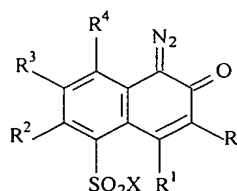
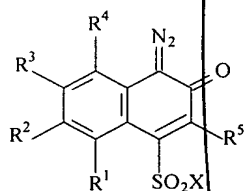
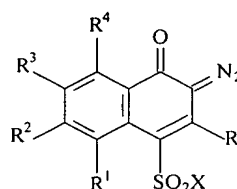
9. The imageable composition of claim 1, wherein said hydroxyfunctional resin comprising said covalently bound radiation sensitive group is prepared by a process comprising:

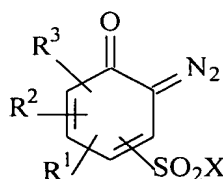
contacting in the presence of a base:

(i) a radiation sensitive compound selected from the group consisting of compounds represented by the formula:



a





and a mixture thereof; wherein each of R^1 , R^2 , R^3 , R^4 and R^5 is independently selected from the group consisting of: hydrogen, linear, branched or cyclic alkyl of 1 to 22 carbon atoms, aralkyl of 6 to 22 carbon atoms, aryl, alkaryl, alkoxy of 1 to 22 carbon atoms, haloalkyl, halogen, acyl, ester and cyano; and wherein x is halogen; and

(ii) a hydroxyfunctional resin free of radiation sensitive groups, wherein said contacting is carried out under reaction conditions sufficient to produce said hydroxyfunctional resin comprising a covalently bound radiation sensitive group.

10. The imageable composition of claim 9, wherein said hydroxyfunctional resin free of radiation sensitive groups is selected from the group consisting of: polyfunctional phenolic resin, a novolak resin, a pyrogallol/acetone resin, polyvinyl phenol polymer, vinyl phenol/hydrocarbyl acrylate copolymer, a resole resin, an acrylic resin, a polyester resin, a polyurethane resin, a polyol and a mixture thereof.

11. The imageable composition of claim 1, wherein said isocyanate crosslinking agent comprises, on average, at least two isocyanate groups.

12. The imageable composition of claim 11, wherein said isocyanate crosslinking agent comprises, on average, from about two to about three isocyanate groups per isocyanate crosslinking agent.

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13. The imageable composition of claim 11, wherein said isocyanate crosslinking agent is selected from the group consisting of: isophorone diisocyanate, methylene-bis-phenyl diisocyanate, toluene diisocyanate, hexamethylene diisocyanate, tetramethylxylylene diisocyanate, dimers thereof, adducts thereof with diols, adducts thereof with triols, adducts thereof with polyols, adducts thereof with polyesters, adducts thereof with acrylic resins, adducts thereof with polyurethane polyols, adducts thereof with an isocyanate blocking agent and mixtures thereof.

14. The imageable composition of claim 13, wherein said isocyanate blocking agent is selected from the group consisting of: a phenol, an oxime, a lactam and a pyrazole.

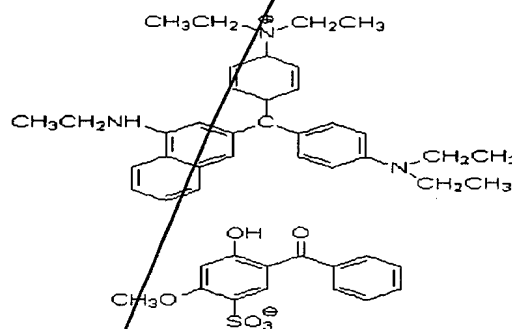
15. The imageable composition of claim 14, wherein said isocyanate blocking agent is selected from the group consisting of: phenol, methyl ethyl ketone oxime, 2-pyrrolidone, 2-piperidone, caprolactam and 3,5-dimethylpyrazole.

16. The imageable composition of claim 1, further comprising: a colorant; and an acid generator.

17. The composition of claim 16, wherein said colorant is selected from the group consisting: of a colorant dye, a colorant pigment and a combination thereof.

18. The composition of claim 17, wherein said colorant dye is selected from the group consisting of: crystal violet, crystal violet lactone,

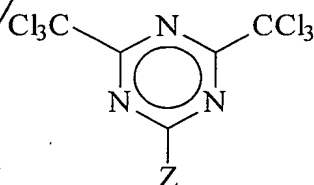
basonyl blue, victoria pure blue BO, victoria blue B, blue colorant dye
victoria blue FBR represented by the formula:



and a mixture thereof.

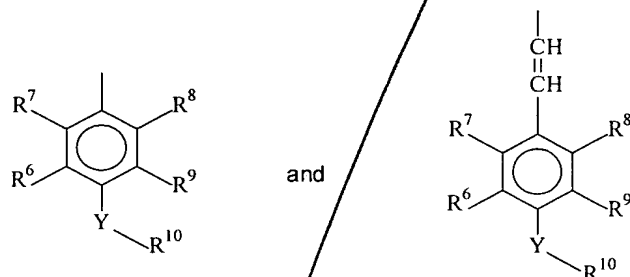
19. The imageable composition of claim 16, wherein said acid generator is selected from the group consisting of: a light sensitive triazine compound, an onium salt, a covalently bound sulfonate group containing compound, hydrocarbysulfonamido-N-hydrocarbysulfonate and a combination thereof.

20. The imageable composition of claim 19, wherein said acid generator is a light sensitive triazine compound represented by the formula:



wherein Z selected from the group consisting of: hydrogen, linear, branched or cyclic alkyl of 1 to 22 carbon atoms, aralkyl of 6 to 22 carbon

atoms, aryl, alkaryl, alkoxy of 1 to 22 carbon atoms, haloalkyl, halogen, acyl, ester, cyano, a group represented by the formula:

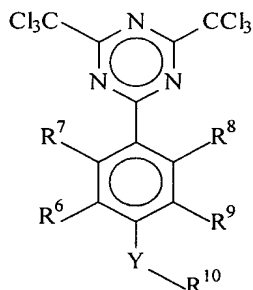


wherein each of R^6 , R^7 , R^8 and R^9 is independently selected from the group consisting of: hydrogen, linear, branched or cyclic alkyl of 1 to 22 carbon atoms, aralkyl of 6 to 22 carbon atoms, aryl, alkaryl, alkoxy of 1 to 22 carbon atoms, haloalkyl, halogen, acyl, ester and cyano, wherein R^6 and R^7 and/or R^8 and R^9 together can form a cycloaliphatic, benzo or a substituted benzo ring;

wherein R^{10} is selected from the group consisting of: linear, branched or cyclic alkyl of 1 to 22 carbon atoms, aralkyl of 6 to 22 carbon atoms, aryl, alkaryl, haloalkyl, acyl, ester and cyano; and

wherein Y is a heteroatom selected from the group consisting of: oxygen and sulfur.

21. The imageable composition of claim 20, wherein light sensitive triazine compound is represented by the formula:

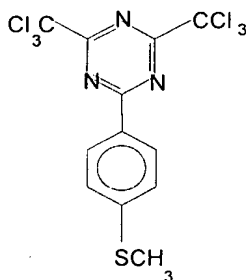
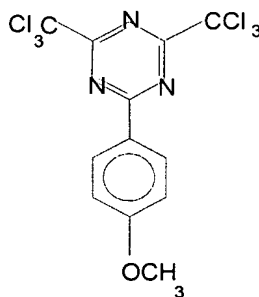


wherein each of R^6 , R^7 , R^8 and R^9 is independently selected from the group consisting of: hydrogen, linear, branched or cyclic alkyl of 1 to 22 carbon atoms, aralkyl of 6 to 22 carbon atoms, aryl, alkaryl, alkoxy of 1 to 22 carbon atoms, haloalkyl, halogen, acyl, ester and cyano, wherein R^6 and R^7 and/or R^8 and R^9 together can form a cycloaliphatic, benzo or a substituted benzo ring;

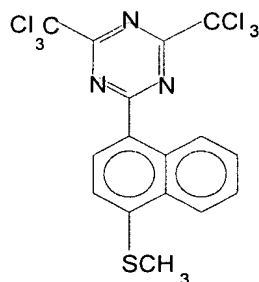
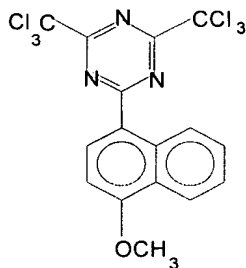
wherein R^{10} is selected from the group consisting of: linear, branched or cyclic alkyl of 1 to 22 carbon atoms, aralkyl of 6 to 22 carbon atoms, aryl, alkaryl, haloalkyl, acyl, ester and cyano; and

wherein Y is a heteroatom selected from the group consisting of: oxygen and sulfur.

22. The imageable composition of claim 21, wherein said light sensitive triazine compound is selected from the group consisting of:



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and a mixture thereof.

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23. The imageable composition of claim 19, wherein said onium salt is selected from the group consisting of: an iodonium salt, a sulfonium salt, a hydrocarbyloxysulfonium salt, a hydrocarbyloxyammonium salt, an aryl diazonium salt and a combination thereof.

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24. The imageable composition of claim 23, wherein said onium salt has a non-nucleophilic counter anion selected from the group consisting of: tetrafluoroborate, hexafluorophosphate, hexafluoroarsenate, hexafluoroantimonate, tetrakis(pentafluorophenyl)borate, triflate, pentafluoropropionate, pentafluoroethanesulfonate, benzenesulfonate, p-methylbenzenesulfonate and pentafluorobenzenesulfonate.

25. The imageable composition of claim 23 wherein said hydrocarbyloxyammonium salt is a salt of an N-hydrocarbyloxy substituted nitrogen containing heterocyclic compound.

26. The imageable composition of claim 25 wherein said N-hydrocarbyloxy substituted nitrogen containing heterocyclic compound is N-ethoxyisoquinolinium hexafluorophosphate.

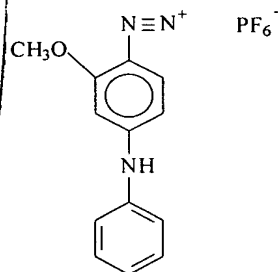
27. The imageable composition of claim 23, wherein said iodonium salt is 4-octyloxyphenyl phenyliodonium hexafluoroantimonate.

28. The imageable composition of claim 23, wherein said acid generator is a monomeric or oligomeric aromatic diazonium salt.

29. The imageable composition of claim 28, wherein said diazonium salt has a counteranion other than a halide.

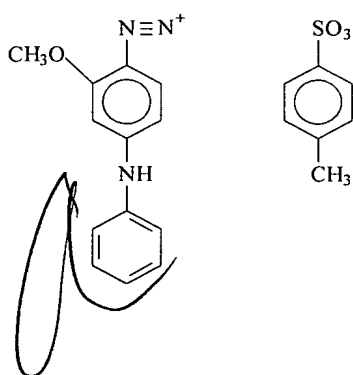
30. The imageable composition of claim 29, wherein said counter anion is selected from the group consisting of: sulfate, bisulfate, tetrafluoroborate, hexafluorophosphate, hexafluoroarsenate, hexafluoroantimonate, tetrakis(pentafluorophenyl)borate, triflate, pentafluoropropionate, pentafluoroethanesulfonate, benzenesulfonate, p-methylbenzene-sulfonate and pentafluorobenzenesulfonate.

31. The imageable composition of claim 28, wherein said diazonium salt is selected from the group consisting of: 2-methoxy-4-phenylaminobenzene diazonium hexafluorophosphate represented by the formula:



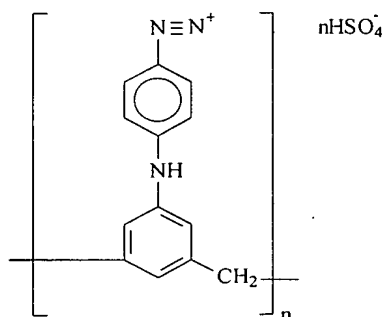
2-methoxy-4-phenylaminobenzene diazonium p-toluenesulfonate
represented by the formula:

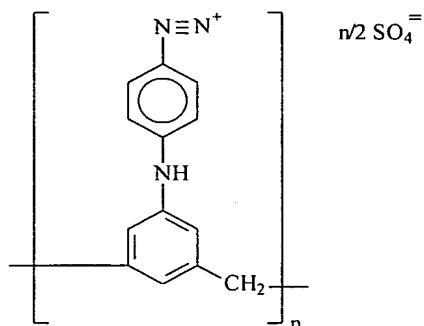
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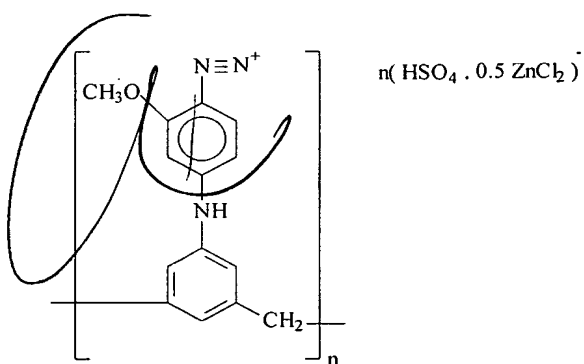
an oligomeric diazonium salt selected from the group consisting of
compounds represented by the formula:

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and



wherein n is from 1 to 11; and a combination of any of the
aforementioned compounds.

32. The imageable composition of claim 1, wherein said
isocyanate crosslinking agent is a blocked isocyanate crosslinking agent.

33. The imageable composition of claim 1, wherein the
imageable composition is crosslinked.

34. An imageable element comprising:

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a substrate; and

a positive working imageable composition coated on a surface of said substrate, said composition comprising: a hydroxyfunctional resin comprising a covalently bound radiation sensitive group capable of increasing the solubility of said imageable composition in an alkaline developer upon exposure to radiation; and an isocyanate crosslinking agent.

35. The imageable element of claim 34, wherein said positive working imageable composition is crosslinked.

36. The imageable element of claim 34, wherein said positive working imageable composition further comprises a colorant and an acid generator.

37. A method of producing an imaged element comprising the steps of:

providing an imageable element comprising a substrate and a positive working imageable composition coated on a surface of said substrate, said composition comprising: a hydroxyfunctional resin comprising a covalently bound radiation sensitive group capable of increasing the solubility of said imageable composition in an alkaline developer upon exposure to radiation; and an isocyanate crosslinking agent;

heating said imageable element at a temperature and length of time sufficient to produce a crosslinked imageable element;

imagewise exposing said crosslinked imageable element to radiation to produce an imagewise exposed element having exposed and unexposed regions; and

contacting said imagewise exposed element and a developer to remove the exposed regions and thereby produce said imaged element.

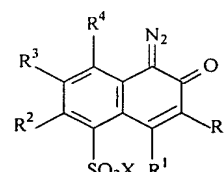
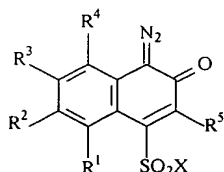
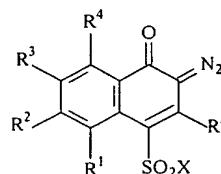
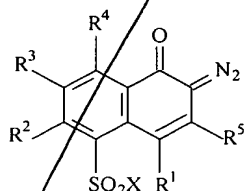
38. The method of claim 37, wherein said positive working imageable composition further comprises a colorant and an acid generator.

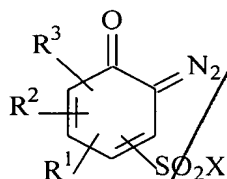
5 39. The method of claim 37, wherein said exposing step is carried out using ultraviolet radiation.

10 40. A radiation sensitive hydroxyfunctional resin comprising a covalently bound radiation sensitive group capable of increasing solubility of a crosslinked imageable composition derived therefrom in an alkaline developer after exposure of said crosslinked imageable composition to radiation.

15 41. The radiation sensitive hydroxyfunctional resin of claim 40, wherein said radiation is ultraviolet radiation.

20 42. The radiation sensitive hydroxyfunctional resin of claim 41, wherein said ultraviolet radiation sensitive group is derived from an ultraviolet radiation sensitive compound selected from the group consisting of compounds represented by the formula:

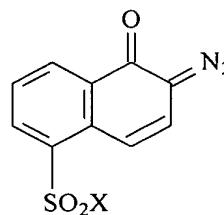
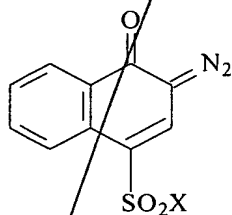




and a mixture thereof;

- 5 wherein each of R^1 , R^2 , R^3 , R^4 and R^5 is independently selected from the group consisting of: hydrogen, linear, branched or cyclic alkyl of 1 to 22 carbon atoms, aralkyl of 6 to 22 carbon atoms, aryl, alkaryl, alkoxy of 1 to 22 carbon atoms, haloalkyl, halogen, acyl, ester and cyano; and
 10 wherein x is halogen.

43. The radiation sensitive hydroxyfunctional resin of claim 42,
 wherein said ultraviolet radiation sensitive compound is selected from the
 group consisting of compounds represented by the formula:



wherein x is chlorine.

44. The radiation sensitive hydroxyfunctional resin of claim 40,
 20 wherein the said radiation sensitive hydroxyfunctional resin is derived from a hydroxyfunctional resin free of radiation sensitive groups.

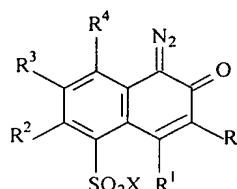
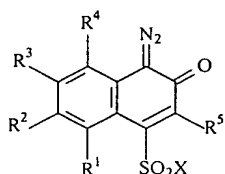
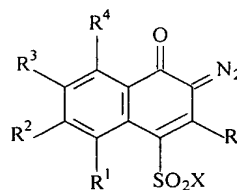
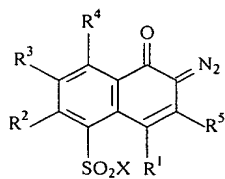
45. The radiation sensitive hydroxyfunctional resin of claim 44, wherein said polyfunctional phenolic resin free of radiation sensitive groups is selected from the group consisting of: a polyfunctional phenolic resin, an acrylic resin, a polyester resin, a polyurethane resin, a polyol a
5 novolak resin, a pyrogallol/acetone resin, a polyvinyl phenol polymer, a vinyl phenol/hydrocarbonyl acrylate copolymer, a resole resin and a mixture thereof.

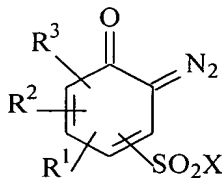
46. The radiation sensitive hydroxyfunctional resin of claim 45,
10 wherein said polyfunctional phenolic resin free of radiation sensitive groups is selected from the group consisting of: a phenol novolak resin, a cresol novolak resin, a phenol/cresol novolak resin, a resole resin and a mixture thereof.

47. The radiation sensitive hydroxyfunctional resin of claim 40, wherein said radiation sensitive hydroxyfunctional resin is prepared by a process comprising:
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contacting in the presence of a base:

(i) a radiation sensitive compound selected from the group
20 consisting of compounds represented by the formula:





and a mixture thereof; wherein each of R^1 , R^2 , R^3 , R^4 and R^5 is
 5 independently selected from the group consisting of: hydrogen, linear,
 branched or cyclic alkyl of 1 to 22 carbon atoms, aralkyl of 6 to 22 carbon
 atoms, aryl, alkaryl, alkoxy of 1 to 22 carbon atoms, haloalkyl, halogen,
 acyl, ester and cyano; and wherein x is halogen; and

(ii) a hydroxyfunctional resin free of radiation sensitive groups,
 10 wherein said contacting is carried out under reaction conditions sufficient
 to produce said radiation sensitive hydroxyfunctional resin.

48. The radiation sensitive hydroxyfunctional resin of claim 47,
 wherein said hydroxyfunctional resin free of radiation sensitive groups is
 15 selected from the group consisting of: a polyfunctional phenolic resin, an
 acrylic resin, a polyester resin, a polyurethane resin, a polyol a novolak
 resin, a pyrogallol/acetone resin, a polyvinyl phenol polymer, a vinyl
 phenol/hydrocarbyl acrylate copolymer, a resole resin and a mixture
 thereof.

49. The radiation sensitive hydroxyfunctional resin of claim 48,
 wherein said polyfunctional phenolic resin free of radiation sensitive
 groups is selected from the group consisting of: a phenol novolak resin, a
 25 cresol novolak resin, a phenol/cresol novolak resin, a resole resin and a
 mixture thereof.